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Dr. Middleton PHYS 132 HW

4-11-17 Ch. 34

CQ: 8 & 10

P: 26, 58

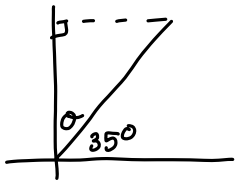
Problems

34.P.26

$P_R = 200\ mW$

$\theta = 35^\circ$

$\theta = 55^\circ$



$I = \frac{P}{A}$

$I = I_0 \cos^2\theta$

$\frac{P}{A} = \frac{P}{A}\cos^2\theta$

$P_1 = P_0 \cos^2\theta$

$P_0 = 200 \times 10^{-3} W$

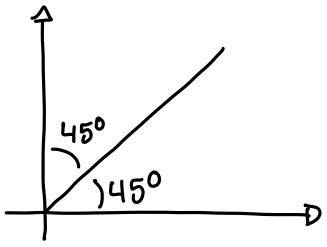
$\theta = 35^\circ$

$P_1 = (200 \times 10^{-3} W)\cos^2(55^\circ) = 0.0658$

65 mW

P = 65mW

34, P. 58

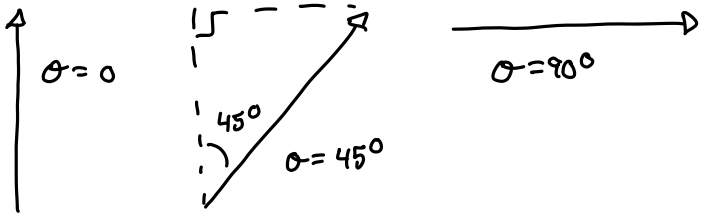


$I = I_0 \cos^2\theta$, $I = P/A$

$\frac{P}{A} = \frac{P_0}{A_0}\cos^2\theta$

$P = P_0 \cos^2\theta$

$I_3 = \frac{1}{8}\ W/m^2$



$I = I_0 \cos\theta^2$
$I = 1/2$

$I = I_0 \cos^2\theta$
$I = \frac{1}{2}(\frac{1}{2})$
$I_0 = 1/4$

$I = I_0 \cos^2\theta$
$I = (1/4)(1/2)$
$I = 1/8$

Conceptual

34.CQ.8

a.) If the amplitude is doubled, the intensity is quadrupled. (4x)

b.) If the amplitude is doubled, the intensity is quadrupled. (4x)

c.) The intensity will be quadrupled if both are doubled. (4x)

d.) The intensity is not dependent on frequency. The same. (same)

34.CQ.10

$I_d > I_c = I_e > I_B > I_A$